CHIMCOMPLEX S.A. Borzesti
sucursala Ramnicu Valcea

SAFETY DATA SHEET-extended

Prepared in accordance with Commission regulation (EU) 830/2015
amending Regulation (EC) No 1907/2006 (REACH)

PETOL PM 410-4N

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade name	PETOL 410-4N
Chemical name	p-Nonylphenol, formaldehyde, diethanolamine propoxylated A polypropoxylated p-nonylphenol-formaldehide-diethanolamine Mannich base
IUPAC name	Poly[oxy(methyl-1,2-ethanediyl)], a-hydro-omega-hydroxy-, ether with 2,6 bis{[(2-hydroxyethyl)amino]methyl}-4-nonylphenol
EC name	Formaldehyde, polymer with nonylphenol, reaction products with diethanolamine and propylene oxide
EINECS EU (EC no.)	614-668-1
CAS no.	68610-97-9
Registration number	01-2119928014-47-0001
Molecular weight range	> 520.0 — < 700.0

1.2. Relevant identified uses of the substance or mixture and uses advised against

Petol PM 410-4N is a Mannich polyol used in polyol blends for rigid foams blow with water for pipes insulation and for spray rigid foams.
Main applications: rigid polyurethane foams, semi rigid polyurethane foams, cross linker agent.

Relevant identified uses:
Formulation [SU 10] (PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 15)
Industrial use [SU3]; Industrial use as intermediate (PROC 1, PROC 2, PROC 3, PROC 8b, PROC 9, PROC 15)
Industrial use [SU3]-Rigid foam (PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 10, PROC 13, PROC 15, PROC 21)
Industrial use[SU3]-Foundry industrial use (PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 14, PROC 15)
Professional use[SU 22]; Rigid foam professional use (PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 13)

Uses advised against: There are no uses advised against.

1.3. Details of the supplier of the safety data sheet

Name	S.C. Chimcomplex SA Borzesti – Sucursala Ramnicu Valcea
Address	1 Uzinei Street, 240050 Ramnicu Valcea, Romania
Phone N°	+40 250 701 785 +40 250 701 200 ext.2785, 3001, 3115
FAX N°	+40 250 739 760; +40 250 735 030

1.4. Emergency telephone number

European Emergency N°:	112
Emergency telephone at the company:	+40/250/738141- available 24h/day/365days
For Romania- The institution responsible with providing information in case of a health emergency is The National Institute for Public Health, Department for the International Sanitary Regulation and Toxicological Information.	Telephone: 021.318.36.06, Opening hours: Monday - Friday from 8 to 3 p.m.

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or the mixture

2.1.1. Classification according to Regulation (EC) 1272/2008 (CLP)
Skin Irrit. Categ. 2, H315
Eye Irrit. Categ. 2, H319
Skin Sens.categ.1, H317
Aquatic Chronic categ.2, H411

2.2. Label elements

Labeling according to Regulation (EC) 1272/2008

Signal word: Warning

Hazard pictogram:

GHS07: exclamation mark

GHS09: environment

Hazard statements:
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H411: Toxic to aquatic life with long lasting effects.

Precautionary statements:
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P501: Dispose of contents/container to according to in force regulation.

2.3 Other hazard: Based on the PBT and vPvB assessment carried out the substance is not a PBT / vPvB substance.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Identification name	CAS no	EC no.	Weight % content
Petol 410-4N	68 909-26-2	614-668-1	Up to 100

Impurities: No impurities relevant for classification and labeling.

4. FIRST - AID MEASURES

4.1 Description of first aid measures

General Advice: IF exposed or if you feel unwell: Call a Poison Center or doctor/physician. Show this safety data sheet to the doctor in attendance.

Following inhalation: Remove affected person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Following skin contact: Wash skin with soap and plenty of water immediately at least 15 minutes, until no evidence of chemical remains.

Following eye contact: Wash eyes immediately with large amounts of lukewarm water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains at least 15 minutes. Get medical attention immediately if pain, blinking, tears or redness persist.

Following ingestion: Not expected to be an important route of entry into the body. The product has low to very low oral toxicity. If accidentally ingested, seek medical attention

4.2. Most important symptoms and effects, both acute and delayed

By skin contact: Causes skin irritation. May cause an allergic skin reaction on prolonged or repeated contact.
By eye contact: Contact with eyes cause irritation.
By inhalation: Due to low vapor pressure at room temperature, Petol polyols alone are not likely to be inhaled. Inhalation of vapors from heated materials may cause respiratory irritation and symptoms may include cough and sometimes slight dizziness.
By ingestion: No known significant effects or critical hazards.
Due to low vapor pressure at room temperature, Petol polyols alone are not likely to be inhaled.

4.3. Indication of immediate medical attention and special treatment needed

No specific antidote. Treat symptomatically and supportively.

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5. FIRE - FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Dry chemical, carbon dioxide, dry chemical, foam and water spray.
Unsuitable extinguishing media: Do not use direct water stream as it may spread the fire.

5.2 Special hazards arising from the substance or mixture
Exposure hazards: Polyether polyols are low in volatility are not considered serious fire hazard However, in the presence of an existing fire, or under the proper conditions of heat and oxygen, will burn. Heat or fire may produce decomposition products, which may be hazardous. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain

5.3 Advice for firefighters
Protection of the fire-fighters: Firefighters should be equipment with protective equipment and self-contained breathing apparatus to protect against potentially toxic and irritating fumes.

Fire Fighting Procedures: Keep unnecessary and unprotected personnel away from entering. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.

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6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: No special protection. Ventilate area of leak or spill. Wear appropriate personal protective equipment. Spills may cause very slippery surfaces. Spread granular cover.

6.2 Environmental precautions

Environmental precautions: Prevent contamination of ground and surface water by isolating the hazard area. Contain and recover liquid when possible. Water polluting material! May be harmful to the environment if released in large quantities. Collect spillage. Keep closed containers and dispose according to all applicable federal, state or local environment regulations.

6.3 Methods and materials for containment and cleaning up

Methods of cleaning up: Absorb spills with dry sand, earth or similar absorbent material then collect into drums for later disposal. Incinerate or bury in a licensed facility according to national environmental regulations.
For small spills: Minor spills on concrete or other hard surfaces can be wiped or mopped up. Also small spills can be absorbed with dry sand, earth, vermiculite then collect into drums, small

containers for later disposal. Dispose according to all applicable federal, state or local environment regulations.
For large spills: Industrial spill or release are accidental and are generally contained. For large spills, dike and pump into suitable containers for disposal. The residual spilled material may be absorbed with dry absorbent material (sand, earth, vermiculite). Flush area with plenty of water. Waste water will be treated in biological treatment plant.
Dispose according to the governmental requirements.

Special precautions: Do not use combustible materials, such as saw dust. Do not flush to sewer! Slippery walking! Spread granular cover!

7. HANDLING AND STORAGE

7.1. Precautions for safe handling: No special measures required. It is not considered a hazardous material in most industrial operations. Sources of ignition such as smoking and open flames are prohibited where this compound is handled.
Advice on general occupational hygiene: Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

7.2. Conditions for safe storage, including any incompatibilities
Store in tightly closed containers, in dry and well ventilated areas, away from UV light, between 20-30ºC.
Product will absorb water if the product container is not secured properly. This may affect reactivity, appearance and performance.Therefore, keep drums tightly closed to prevent contamination. Use dry nitrogen or low dew point air for tank padding. Drums should be stacked to a maximum of 3 high.
Incompatible substances: Avoid contact with strong acids, alkalis and oxidizers (like peroxides and hypochlorite salts), water. Avoid unintended contact with isocyanates.
Incompatible materials: Avoid contact with copper, copper alloys and zinc.
Recommended storage material: tanks of stainless steel, IBC Polyethylene (HDPE) tanks (1mc capacity), and steel drums lined inside (200 liters capacity).
Hoses should be of polypropylene, stainless steel or wire bound canvas.

7.3 Specific end use(s)
Recommendations: Not available.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

8.1.1. Occupational Exposure limit values

Occupational Exposure Limit (OEL), 8 h TWA: Not established
Short-term exposure limit (STEL), 15 min: Not established

8.1.2. Information on monitoring procedures

Substance name: Petol P 410-4N - EC: 614-668-1, CAS: 68610-97-9

DNELs

Product name	Type	Exposure	Value	Population	Effects
Polypropoxylated p-nonylphenolformaldehyde-diethanolamine Mannich Base (Petol 410-4N)	DNEL	Long term Inhalation	4,9 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	1,4 mg/kg	Workers	Systemic
	DNEL	Long term Dermal	0,8 mg/kg	Consumers	Systemic
	DNEL	Long term Inhalation	1,4 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	0,8 mg/kg	Consumers	Systemic

PNECs

Product name	Environmental Compartment	PNEC Value	Method detail
Polypropoxylated p-nonylphenolformaldehyde-diethanolamine Mannich Base (Petol 410-4N)	Fresh water	5,6 µg/l	Assessment Factors
	Marine water	0,56 µg/l	Assessment Factors
	Fresh water	0,102 mg/kg	Equilibrium Partitioning
	Marine water	0,0102 mg/kg	Equilibrium Partitioning
	Sewage Treatment Plant	3,14 mg/l	Assessment Factors
	Soil	0,0171 mg/kg dwt	Equilibrium Partitioning

8.2. Exposure control

8.2.1. Engineering controls:

Engineering controls: No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control. Good general ventilation should be sufficient for most conditions.

8.2.2. Personal Protection Equipment

Eye / Face protection: Chemical splash goggles and/or face shield must be worn when possibility exist for eye contact due to splashing or spraying liquid, airborne particles or vapor. Contact lenses must not be worn. Equipment for eye protection should be tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Skin protection: Wear impervious protective clothing including boots, apron, if needed. Wash hands and other exposed area with soap and water before eating, drinking, smoking and when leaving work.
Hand protection**:** Handle with gloves which were inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. The selected protective gloves have to satisfy the specifications of the standard EN 374 derived from it.
Examples of preferred glove barrier materials:
- Butyl rubber
- Nitrile/butadiene rubber
- Polyvinyl alcohol (“PVA”)
- Neoprene:
- Polyvinyl chloride (PVC or “vynil”)
- Natural rubber (“later”)

For prolonged or frequently repeated contact a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended.
NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory protection: No special respirator protection is recommended under anticipated conditions of normal use with adequate ventilation. However, if material is heated or sprayed, without sufficient ventilation use an approved air-purifying respirator.
Organic vapor respirator with a particulate pre-filter may be worn if vapors are detected or irritating.
For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

Other precautions: Maintain shower, eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance	yellow-brown clear viscous liquid
Odour	Odourless

Important health, safety and environmental information

pH	N/A
Boiling point (Initial boiling point and boiling range)	Decomposition temperature: 230°C
Flash point, min	184 °C at 1013 hPa (open cup)
Flammability	not flammable
Explosive properties	non explosive
Oxidizing properties	No oxidizing properties
Vapour pressure, at 20 ^{o}C	61.5 Pa
Partition coefficient	Log Kow (Pow): 2.2 at 25 °C
Vapour relative density (air=1)	N/A
Dynamic viscosity, at 25^{0}C	8000-15000 cP
Density, 25^{0}C	1.01-1.10, g/cm^{3}
Solubility in water	14.24 g/L at 20 °C

Other informations

Melting point	3 °C at 101.3 kPa
Autoignition temperature	338 °C at 1013 hPa

10. STABILITY AND REACTIVITY

10.1. Reactivity: Not considered to be reactive.

10.2 Chemical stability: Stable under normal temperature and pressure, but hygroscopic.

10.4 Conditions to avoid: Moisture, ignition sources and incompatibles.

10.5 Incompatible materials: Avoid contact with strong acids, alkalis and oxidizers such as peroxides and hypochlorite salts, water. Avoid unintended contact with isocyanates.

10.6. Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

	Conclusions
Acute toxicity	Oral route: Rat: LD50 > 2200 mg/kg bw (males/femals) (according to OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method) Dermal route: Rabbit, LD50: >2000 mg/kg bw (male/femals); (according to OECD Guideline 402 Acute Dermal Toxicity) Classification for acute oral and dermal toxicity is not applicable
Irritation/Corrosion	Skin Rabbit: exposure 72h to 0.5 ml obtained score 3 (according to OECD Guideline 404 Acute Dermal Irritation / Corrosion) Exposure to substance cause Erythema/Eschar Eye Rabbit: exposure 72 h to 0.1 ml obtained score ≥2 (According OECD Guideline 405 (Acute Eye Irritation /

	Corrosion) Conclusion: Skin: Causes skin irritation. Eyes: Causes serious eye irritation.
Sensitisation	Skin Species (mouse)- Sensitizing Conclusion: skin sensitization according to OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
Repeated dose toxicity	Under the conditions of the repeated-dose oral toxicity study in rats (OECD 422, GLP), the NOAEL for general toxicity, fertility and developmental toxicity was determined to be 100, 500, and 250 mg/kg bw, respectively. NOAEL: 100 mg/kg bw/day (subacute; rat)
Mutagenity	The test substance is not mutagenic in the bacterial reverse mutation test (GLP-compliant, OECD 471) and in the mammalian gene mutation assay (GLP-compliant, OECD 476) in the presence and absence of metabolic activation. The test substance is not clastogenic in the chromosome aberration test (GLP-compliant, OECD 473) in the presence and absence of metabolic activation. Conclusion: Genetic toxicity: No adverse effect observed (negative)
Carcinogenity	No known significant effects or critical hazards.
Toxicity for reproduction	NOAEL: 500 mg/kg bw/day (rat-oral route) Based on the absence of developmental effects, in the absence of parental toxicity, in the available study (OECD422) classification is not necessary for developmental toxicity in accordance with EU Classification, Labeling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 Conclusion: not classified as reprotoxic.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Acute (short-term) toxicity
Fish: *Danio rerio (reported as Brachydanio rerio)*/Fresh water/ static LC50 (96 h): 8.8 mg/L

Aquatic invertebrates: *Daphnia magna*/freshwater/static EC50 (48 h): 6.5 mg/L

Algae and aquatic plants: *Pseudokirchnerella subcapitata* (algae) /Fresh water/ static
EC50 (72 h): 5.6 mg/L test (alga, Growth Inhibition Test)

Chronic (long-term) toxicity

Fish: not required to be performed

Aquatic invertebrates: not required to be performed

Algae and aquatic plants: *Pseudokirchnerella subcapitata* (algae) /Fresh water/ static
EC50 (72 h): 5.6 mg/L test (alga, Growth Inhibition Test)

Toxicity to soil macro-organisms

EC50/LC50 for aquatic micro-organisms: 114.2 mg/L

EC10/LC10 or NOEC for aquatic micro-organisms: 31.4 mg/L

Toxicity to terrestrial plants: not required to be performed because, based on the log Kow-based organic carbon-water partition coefficient (Koc) of 146 L/kg, the substance will have a low potential to adsorb to soil.

12.2. Persistence and degradability:

Biodegradation: Is not readily biodegradable according to OECD 301 Dcriteria (Biodegardation Closed bottle test): 8.9% in 28 days.

12.3. Bioaccumulative potential:

Product name	Log Pow	BCF	Potential
A polypropoxylated p-nonylphenol-formaldehide-diethanolamine Mannich base	2.2	-	low

12.4. Mobility: Soil/water partition coefficient (Koc)=146

12.5. Results of PBT and vPvB assessment:

The substance is characterized as being not readily biodegradable and fulfils the criterion for Persistence (P). As no further data is available on the (bio-) degradation of the substance, it must be qualified as "vP (and P) ".
Not B / vB based on Log Kow <= 4.5(determinate Log Kow1.72-2.2)
Based on the available ecotoxicological information and chronic (mammalian) toxicity information the substance is qualified as not T.

Conclusion: Substance is not a PBT or vPvB substance, according to Reg. 1907/2006, Annex XIII criteria.

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13. DISPOSAL CONSIDERATIONS

This section contains generic advice and guidance.

13.1 Waste treatment methods

13.1.1 Product
Methods of disposal**:** The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

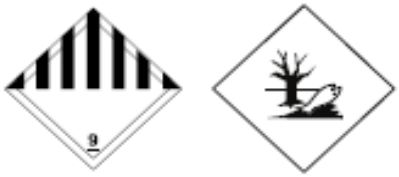
Waste Code (European Waste Catalogue): 16 03 05*: organic wastes containing dangerous substances
Note: Also please refer to your specific industry and take into account the waste composition for establish the correct waste code.

13.1.2. Packaging
Methods of disposal**:** The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Do not heat or cut container with electric or gas torch.

Relevant European legislation regarding waste:
Directive 2008/98/EC on waste (Waste framework Directive)
Directive 2008/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste
Regulation (Ec) No 1013/2006 of the European Parliament and of the Council on shipments of waste, with subsequent modifications and additions.

14. TRANSPORT INFORMATION

Transport Labeling



RID/ADR

UN No.	3082
Proper shipping name	Polypropoxylated p-nonylphenolformaldehyde-Diethanolamine Mannich Base
Hazard class	9
UN Packing Group	III
Hazard identification no.	90

Additional information
This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.
The environmentally hazardous mark is not required when transported in size of ≤5 L or ≤ 5kg for any mode of transportation
Tunnel code: (E)

IMDG/IMO

UN No.	3082
Hazard class	9
UN Packing Group	III
Proper shipping name	Polypropoxylated p-nonylphenolformaldehyde-Diethanolamine Mannich Base
Emergency schedules (EmS)	F-A, S-F

Marine pollutant	yes
IATA/IT-ICAO	
Proper shipping name	Polypropoxylated p-nonylphenolformaldehyde-Diethanolamine Mannich Base
UN No.	3082
Hazard class	9
UN Packing Group	III

This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1,5.0.2.6.1.1 and 5.0.2.8.

Passenger and Cargo Aircraft
Quantity limitation: 450 L
Packaging instructions: 964
Cargo Aircraft Only
Quantity limitation: 450 L
Packaging instructions: 964
Limited Quantities – Passenger Aircraft
Quantity limitation: 30 kg
Packaging instructions: Y964
Special provisions
A97, A158, A197

Additional information
Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant information regarding the European legislation
EU Regulation (EC) No. 1907/2006 (REACH) Regulation (EC) no.1907/2006 of the European Parliament and of the Council regarding the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation
Regulation (EC) no.1272/2008 of the European Parliament and of the Council on the Classification, Labeling and Packaging of substances and mixtures.

Directive 2012/18/EU (SEVESO III) of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC
Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
Regulation referring to the International Carriage of Dangerous Goods by Rail (RID
International Maritime Dangerous Goods (IMDG

Authorization: Petol PM 410-4N is not subject for authorization

Restrictions on use: no restriction

Other EU regulations: Petol PM 410-4N is not subject to:
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer
Regulation (EC) No 850/2004 on persistent organic pollutants
Regulation (EC) No 649/2012 concerning the export and import of dangerous chemicals
Directive 2012/18/EU -SEVESO III Directive.

15.2 Chemical safety Assessment
A chemical safety assessment has been carried out for this substance and CSR was issued.

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16. OTHER INFORMATION

Data are based on our latest knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

16.1. Relevant H-statements (number and full text)
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H411 Toxic to aquatic life with long lasting effects.

16. 2. Abbreviation and acronyms (NOT ALL ARE USED IN THIS SDS)
AC Article category
ADR European agreement concerning the international carriage of dangerous goods by road
BSAF Bio soil accumulation factor
BCF Bio concentration factor

CAS Chemical Abstracts Service
CLP Classification, labelling and packaging
CMR Carcinogenic, mutagenic or toxic for reproduction
CSA/CSR Chemical safety assessment / Chemical safety report
DNEL Derived no effect level
EC10 Concentration of a substance where 10% of the population is affected
EC50 Concentration of a substance where 50% of the population is affected
ECHA European chemicals agency
EINECS EU list of existing chemical substances
EmS Emergency schedule
ERC Environmental release category
ES Exposure scenario
eSDS Extended safety data sheet
GHS Globally harmonised system
IATA-DGR International air transport association - dangerous goods regulations
ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air
IU Identified use
IUPAC International Union of Pure and Applied Chemistry
IBC code International code for the construction and equipment of ships carrying dangerous chemicals in bulk
IMDG International maritime dangerous goods
KP Partition coefficient
LC10 Lethal concentration of a substance that can be expected to cause death in 10% of the population
LC50 Lethal concentration of a substance that can be expected to cause death in 50% of the population
LD50 Lethal dose of a substance that can be expected to cause death in 50% of the population
NO(A)EC No observed (adverse) effect concentration
NO(A)EL No observed (adverse) effect level
OECD Organisation for economic co-operation and development
OEL Occupational exposure limit
PBT Persistent, bioaccumulative, and toxic
PC Product category
PNEC Predicted no-effect concentration
PROC Process category
REACH Registration, evaluation, authorisation and restriction of chemicals (i.e. Regulation (EC) No. 1907/2006)
RID International rule for transport of dangerous substances by railway
SDS Safety data sheet

STOT Specific target organ toxicant
STP Sewage treatment plant
SU Sector of end use
TWA Time weighted average
vPvB Very persistent, very bioaccumulative

16.3. Key literature references

The information provided in this eSDS is consistent with the information provided in the REACH CSR. The CSR contains a complete reference list for all data used. Non confidential data from the REACH registration dossier are published by the ECHA, see https://echa.europa.eu/information-on-chemicals/registered-substances ; http://echa.europa.eu/clp/c_l_inventory_en.asp http://chelist.jrc.ec.europa.eu

16.4. Revision 0

Disclaimer:

Chimcomplex SA Borzesti provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. Furthermore, this safety data sheet is made up based on the legal requirements as set by EC 1907/2006 (REACH) and EC Regulation 830/2015.

ANNEX 1 – EXPOSURE SCENARIO

Worker contributing scenario 1: Use in closed process, no likelihood of exposure (PROC 1)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed system (minimal contact during routine operations)	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm2)	TRA Workers 3.0

	Method
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Worker contributing scenario 2: Use in closed, continuous process with occasional controlled exposure (PROC 2)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0

	Method
• Containment: Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its	

	Method
use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Worker contributing scenario 3: Use in closed batch process (synthesis or formulation) (PROC 3)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 4 hours *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed batch process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%) if duration exceeds 4 hours.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	

	Method
• Additional dermal protection: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Worker contributing scenario 4: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 1 hour *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%)if duration exceeds 1 hour.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider	

	Method
technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Worker contributing scenario 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 1 hour *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0

	Method
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%)if duration exceeds 1 hour.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider	

	Method
the need for risk based health surveillance.)	

Worker contributing scenario 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 15 minutes *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Good general ventilation (3-5 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%)if duration exceeds 15 min.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used	

	Method
correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Worker contributing scenario 7: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 4 hours *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0

	Method
Technical and organisational conditions and measures	
• General ventilation: Good general ventilation (3-5 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 95%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%)if duration exceeds 4 hours.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local	

	Method
exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Worker contributing scenario 8: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 1 hour *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Good general ventilation (3-5 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to	TRA Workers 3.0

	Method
EN374 with specific activity training) [Effectiveness Dermal: 95%]	
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%)if duration exceeds 1 hour.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

.Worker contributing scenario 9: Use as laboratory reagent (PROC 15)

Conditions of use

	Method
Product (article) characteristics	
• Concentration of substance in mixture: >25%	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 1 hour *Or use a respirator with APF of 10 (Inhal: 90%)*	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: yes [Effectiveness Inhal: 90%]	TRA Workers 3.0
• Local exhaust ventilation (for dermal): no [Effectiveness Dermal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal Protection: Yes (chemically resistant gloves conforming to EN374 with specific activity training) [Effectiveness Dermal: 95%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%] *Use a respirator with APF of 10 (Inhal: 90%)if duration exceeds 1 hour.*	TRA Workers 3.0
• Eye protection: Yes (Avoid direct eye contact with product, also via contamination on hands. Use suitable eye protection.)	
• Additional dermal protection:: Wear suitable coveralls to prevent exposure to the skin.	
• Supervision (W-4): Check that RMMs are used correctly (Supervision in place to check that the RMMs in place are being used correctly and OCs followed.)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Process temperature (for liquid): <= 40 °C	TRA Workers 3.0

	Method
• Skin surface potentially exposed: One hand face only (240 cm2)	TRA Workers 3.0
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
• General measures for sensitizers (R43): yes [G20] (Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.)	

Conclusion on risk characterisation

The substance is classified for skin sensitisation (H317/R43 – Skin Sens. Cat. 1A), skin irritation (H315/R38) and eye irritation (H319/R36). In accordance with the REACH guidance part E, a qualitative assessment is performed to identify suitable risk management measures for these effects.

Dermal exposure

Likelihood/frequency of exposure is considered to be low for this contributing scenario due to careful procedures in laboratories. Actual exposure will be further reduced due to stringent use of coveralls and protective gloves. Workers receive a task specific training on how to use the protective equipment. Correct use of the control measures is supervised. Equipment and general control measures are regularly inspected, tested and maintained. Taking these measures into account, the intensity of exposure is considered to be very low and the risks are considered to be controlled.

Ocular exposure
Exposure to the eyes can occur in two ways: direct from the air (splashes, aerosols, dust) or indirect via hand-eye contact.
The likelihood/frequency of hand-eye contact is considered to be very low due to careful procedures in laboratories, moreover the likelihood of actual hand exposure is at most low as workers wear protective gloves and have been trained to prevent exposure.
Application of eye-protection equipment will further prevent any exposure via direct contact with concentrations in the air. Taking these measures into account, the intensity of exposure is considered to be very low and the risks are considered to be controlled.

Inhalation exposure
An inhalation long term exposure assessment is not needed. Information on long term local inhalation toxicity is not required because information on long term and acute toxicity via the oral and dermal route is available (REACH Annex VII to Annex X and according to ECHA guidance Chapter R.7.4).